CLAIMS

I claim:

1. A power transfer system for converting recurring wave movement within the ocean to electrical energy, said system comprising:

pressure sensing structure positioned at a stationary location at an ocean floor below water level and below a location of wave movement for (i) registering changes in height of water above the pressure sensing structure and (ii) providing an electrical power output corresponding to changes in force associated with the changes in the height of water;

a transfer medium coupled at one end to the pressure sensing structure and extending along the ocean floor to a second end at a shore location adjacent the location of wave movement, said transfer medium including means for transmitting the electrical power output of the pressure sensing structure to the shore location; and

electrical power receiving means coupled to the transfer medium at the shore location for receiving the electrical power output from the transfer medium and for processing the electrical power output to a useful form of energy.

2. A power transfer system as defined in claim 1, wherein the pressure sensing structure comprises a pressure transducer which responds to changes in pressure and supplies the electrical power output as an output voltage.

3. A power transfer system as defined in claim 2, wherein the pressure transducer comprises a piezoelectric material which responds to changes in pressure to produce the electrical power output, said transfer medium comprising a conductive material connected at one end to the pressure transducer and at the other end to the power receiving means.

4. A power transfer system as defined in claim 1, wherein the pressure sensing structure comprises an interconnected array of pressure transducers including an output connection coupled to the power transfer medium.

5. A power transfer system as defined in claim 4, wherein the array of pressure transducers are interconnected in parallel relationship to an output connection which cumulates voltage output from individual pressure transducers for transmission to the transfer medium.

6. A power transfer system as defined in claim 2, wherein the power receiving means comprises a battery storage system for storing electrical energy received from the output voltage.

7. A power transfer system as defined in claim 3, wherein the array of transducers are buried within a section of ocean floor at sufficient depth to be substantially undisturbed by currents and sea life.

8. A power transfer system as defined in claim 7, wherein the transfer medium comprises connecting wire at the ocean floor between the array of transducers and the power receiving means.

9. A power transfer system as defined in claim 3, wherein the array of pressure transducers comprises a mat of interconnected pressure transducers and connecting wires, said mat including a common output lead coupled to the transfer medium.

10. A power transfer system as defined in claim 2, wherein the pressure transducer includes:

a combination coil and magnet in relative movable relationship;

a head plate coupled to the combination coil and magnet and being configured to respond directly to the changes in weight of water overhead to vertically displace and induce the relative movable relationship of the coil and magnet for activating a current within the coil; and

restoring means coupled to the head plate for periodically elevating the head plate to a rest position during a trough of the overhead wave in preparation for a following downward displacement responsive to increased weight of water generated by a following wave crest.

11 . A power transfer system as defined in claim 10, further comprising a secondary plate movably coupled with the head plate and being configured to amplify any vertical displacement of the head plate with increased displacement of the secondary plate with an attendant increased current output from the coil.

12. A power transfer system as defined in claim 11, further including:

a compression chamber bounded at an upper opening by the movable head plate;

the secondary plate forming a movable surface which is coupled at one side to the compression chamber and movably positioned at an opposing side within a conversion chamber of lesser diameter than the compression chamber and along an axial orientation of displacement;

said compression chamber having a fluid content which transfers force applied to the head plate into the secondary plate in response to displacement of the head plate and causes a volume displacement of the secondary plate within the conversion chamber;

said secondary plate having a lesser surface area than the head plate to cause increased linear displacement of the secondary plate as compared with displacement of the head plate;

said secondary plate being coupled to the combination of coil and magnet to translate said linear displacement into relative movement of the coil and magnet to generate the current within the coil.

13. A power transfer system as defined in claim 11, wherein the secondary plate comprises a rotary plate coupled to a generator at a rotational axis, said system further including intermediate power transmission structure for translating vertical displacement of the head plate into rotational displacement of the rotary plate.

14. A power transfer system as defined in claim 1, wherein the pressure sensing structure comprises a combination of magnet and coil which are positioned to develop an interacting relationship within a magnetic field of the magnet and with respect to the coil, the combination of magnet and coil being movable with respect to each other in response to the changing height and weight of water to thereby generate an electrical current within the coil, said coil being coupled to the power transfer system for delivering the electrical power output.

15. A power transfer system as defined in claim 1, wherein the pressure sensing structure includes:

a combination of magnet and coil in relative movable relationship for generating current within the coil;

a bellows having a movable plate and a stationary plate and a sealed compression chamber there between, said movable plate being coupled to the

combination of magnet and coil and including a power transmission structure to translate plate movement to the relative movement of the magnet and coil;

said movable plate being depressable by an increased column height of water over the movable plate and including a restoring means for elevating the movable plate to a raised, rest position in response to lesser overhead water to generate a pumping action.

16. A power transfer system as defined in claim 1, wherein the power transmission structure includes a lever arm coupled at one end to the pressure sensing structure and at a remaining end to the combination of magnet and coil and including a fulcrum point which provides an increased range of motion for the combination magnet and coil as compared to the end coupled to the pressure sensing structure to increase a range of motion of relative movement between the coil and magnet.

17. A power transfer system as defined in claim 10, wherein the coil is in fixed position and the magnet moves with respect to the coil.

18. A power transfer system as defined in claim 10, wherein the magnet is in fixed position and the coil moves with respect to the magnet.

19. A power transfer system as defined in claim 1, wherein the pressure sensing structure includes:

a housing;

a head plate movably positioned at the top of the housing, said head plate being supported in a movable configuration responsive to changing weight of overhead water based on the wave motion;

a spring mechanism coupled to the head plate for restoring the head plate upward following depression in response to an overhead wave; and

a combination magnet and coil interactively coupled to the head plate and within an attendant magnetic field such that movement of the head plate results in relative movement between the magnet and coil within the magnetic field to generate current within the coil.

20. A power transfer system as defined in claim 17, wherein the coil also comprises the spring mechanism for providing the resistive force, said magnet being supported within an internal volume of the coil and operable to generate a

current within the coil based upon depression of the coil by the overhead wave and concurrent movement of the magnet within the coil.

21. A power transfer system as defined in claim 1, including:

a base plate;

at least one permanent magnet having a plate-like configuration;

a spring mechanism positioned below the magnet and supported by the base plate, said spring mechanism providing a resistive force to support the magnet below a column of water; and

a conductive coil positioned around the magnet and within an attendant magnetic field;

the magnet, coil and spring mechanism be positioned and supported at the base plate to provide oscillating relative movement of the magnet with respect to the coil to generate an electrical current in response to overhead wave action.

22. A method for converting recurring wave movement within the ocean to useful energy, said method comprising the steps of:

a) positioning pressure sensing structure below water level and at an ocean floor location;

b) generating electrical power output from the pressure sensing structure at the ocean floor location by electro-mechanical conversion of gravity force arising from changes in height of water above the pressure sensing structure to electrical current at the ocean floor location; and

c) transferring the electrical power output to a shore location.

23. A method as defined in claim 20, further comprising the step of generating current flow by causing relative movement of a magnet and field coil positioned at the ocean floor in response to changes in weight of overhead water above the pressure sensitive structure.